What is claimed is:

1. A retinal prosthetic for color sight restoration comprising:

a. a color imager to capture color image, said color imaging being part of an external component, which is carried by the patient;

b. a video data processing unit for converting said image to electrical signals which contain image color signal data, said color imaging being part of said external component, which is carried by the patient;

c. a plurality of electrodes and one or more electronic circuits, implantable in the eye, said electrode and said electronic circuits being part of a component which is internal to the eye;

d. an external and internal receiver and transmitter for communication between the external component and the internal components;

e. said implantable electronic circuits configured to receive color signal information from the video data processing unit, activate the electrodes based on said color signal information and extract electrical power from the received signal;

f. said electrodes configured to stimulate those cells of the retina electrically which when stimulated give the perception of color.

2. The retinal color prosthesis as in claim 1 further comprising a video data processing unit which converts said color image to electrical signals corresponding to data for a pixel or grid-like arrangement of electrodes placed within the eye.

3. The retinal color prosthesis as in claim 2 further comprising said video data processing unit wherein data processing algorithms and processing hardware include data processing for electronic compensation for the motion of the eye(s) and head are processed.

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4. The retinal color prosthesis as in claim 3 further comprising an eye-motion compensation system.

5. The retinal color prosthesis as in claim 4 further comprising an eye-movement tracking apparatus; data output of said eye-movement tracking

apparatus; wherein said data corresponds to measurements of eye movement; a transmitter to convey said measurement data to said video data processing unit; wherein the video data processing unit algorithmically processes eye movement measurements such as angular positions, angular velocities, and angular accelerations; temporarily stored data image compensation parameters, stabilization parameters, and adjustment parameters from the processed eye position, eye velocity, and eye acceleration; electronic image stabilization to provide eye-motion compensation computationally derived from said temporarily stored data whereby the electronic image presented to the implanted electrodes inside the eye corresponds to what a normal eye would see when looking in its direction.

6. The retinal color prosthesis as in claim 5 further comprising a head tracking system wherein a basic sensor in the head motion sensor unit is a sensor selected from the group consisting of an integrating accelerometer, a micro-machined mechanical gyroscope, a laser gyroscope, a combination of an integrating accelerometer and a micro-machined mechanical gyroscope; a combination of an integrating accelerometer and a laser gyroscope; the motion and position of the head is determined by said basic sensor; wherein the data are communicated from the head tracking system to the video data processing unit by telemetry; wherein the data are processed in the video data processor; and wherein said video data processing unit can process the data of the motion of the eye as well as that of the head to further adjust the image electronically whereby the electronic data image is presented to the patient adjusted for eye motion and head motion.

7. The retinal color prosthesis as in claim 1 further comprising programmable external-to-the-patient and internal-to-the-eye units which monitor and adjust, upon external command, data to and from the internal-to-the eye retinal implants.

8. The retinal color prosthesis as in claim 7 further comprising a physician's control unit located external to the patient which can controls image data signal information sent from the video data processing unit into the internal-to-the-eye implant; and wherein the physician's control unit can receive information which the internal-to-the-eye implant transmits out of the eye.

9. The retinal color prosthesis as in claim 8 further comprising said unit wherein the physician can control parameters of the image data signal such as amplitudes, pulse widths, frequencies, and patterns of electrical stimulation.

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10. The retinal color prosthesis as in claim 9 wherein said physician's control unit monitors said transmitted-out information including electrode current, electrode impedance, compliance voltage, or, electrical recordings from the retina.

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11. The retinal color prosthesis as in claim 7 further comprising a physician's hand-held test unit comprising a hand-held computer used to set up and evaluate a retinal prosthesis implant during or soon after implantation at the patient's bedside; said hand-held computer having the capability of receiving what signals are transmitted out of the eye and having the ability to send information in to the retinal implant electronic chip; said hand-held computer able to adjust the amplitudes on each electrode, one at a time, or in groups.

12. The retinal color prosthesis as in claim 7 further comprising a patient's control unit wherein a unit located external to the eye controls apparent brightness, contrast and magnification as presented to the patient by the retinal prosthesis; that has circuitry, which upon remote command, will respond in a manner similar to that of said physician's local unit; and which has a transmitter and a receiver for remote communication.

13. The retinal color prosthesis as in claim 11 further comprising the physician's remote unit further comprising a transmitter and a receiver for communication with the video data processing unit wherein said physician's remote unit performs all of the functions of the local physician's control unit.

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14. The retinal color prosthesis as in claim 2 further comprising said video data processing unit for encoding and transmitting time sequences, amplitudes and widths of pulses for signaling color to retinal cells.

15. The retinal color prosthesis as in claim 2 further comprising said

video data processing unit for encoding electrical signal information for signaling color to the different retinal cells, in a planar pattern, corresponding to the location of electrodes in the vicinity of the individual retinal cells, including red-center-green surround, green-center-red-surround, blue-center-yellow surround and yellow-center-blue-surround bipolar cells.

16. The retinal color prosthesis as in claim 1 further comprising one or more hermetically sealed and partially insulated electrode subpart(s).

17. The retinal color prosthesis as in claim 1 further comprising one or more hermetically sealed electronic circuit subpart(s).

18. The retinal color prosthesis as in claim 1 further comprising electronic circuits within the eye for transferring received processed image data to the electrodes.

19. The retinal color prosthesis as in claim 18 further comprising electronic circuits for applying received color signal information to a plurality of electrodes, corresponding to the original external pixel-like scene capture.

20. The retinal color prosthesis as in claim 1 further comprising electronic circuits which measure and transmit out of the eye the signal power level being received internally.

21. The retinal color prosthesis as in claim 1 further comprising electronic circuits which measure and transmit out of the eye an impedance for each of the different electrodes.

22. The retinal color prosthesis as in claim 1 further comprising electronic circuits which measure electrophysiologic retinal recordings and transmit them out of the eye.

23. The retinal color prosthesis as in claim 1 further comprising said internal component at least partially implanted subretinally.

24. The retinal color prosthesis as in claim 1 further comprising said internal component implanted epiretinally.

25. The retinal color prosthesis as in claim 1 further comprising said plurality of electrodes in a monopolar arrangement.

26. The retinal color prosthesis as in claim 1 further comprising said plurality of electrodes in a bipolar arrangement.

27. The retinal color prosthesis as in claim 1 further comprising said plurality of electrodes in a multipolar arrangement.

28. The retinal color prosthesis as in claim 27 further comprising said plurality of electrodes in an electric field focusing arrangement.

29. The retinal color prosthesis as in claim 1 wherein said plurality of electrodes further comprises a substance from the group consisting of pyrolytic carbon, titanium nitride, platinum, iridium, and iridium oxide.

30. The retinal color prosthesis as in claim 16 or claim 17 further comprising an hermetic sealant coating substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide or zirconium oxide.

31. The retinal color prosthesis as in claim 1 further comprising said plurality of electrodes insulated along their extension, up to their tips.

32. The retinal color prosthesis as in claim 31 further comprising said insulation selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

33. The retinal color prosthesis as in claim 1 comprising a plurality of capacitive electrodes, formed from a pair of substances, selected from the group of pairs consisting of the pairs iridium and iridium oxide, and, titanium and titanium nitride.

34. The retinal color prosthesis as in claim 1 comprising a plurality of capacitors which are mounted on the electrode substrate in a one-to-one correspondence with the plurality of electrodes.

35. The retinal color prosthesis as in claim 1 further comprising said internal component having a configuration of two separate parts wherein insulated wires join said parts.

36. The retinal color prosthesis as in claim 35 further comprising one of said two separate parts of the internal component that is configured as a combined electronic and electrode component and the other of said two separate parts of the internal component which is also configured as a combined electronic and electrode component.

37. The retinal color prosthesis as in claim 36 further comprising one of said combined electronic and electrode component subretinally positioned and the other of said combined electronic and electrode component epiretinally positioned.

38. The retinal color prosthesis as in claim 37 wherein said two components are held positioned in a prescribed relationship to each other by small magnets.

39. The retinal color prosthesis as in claim 37 wherein said two components are held positioned in a prescribed relationship to each other by alignment pins.

40. The retinal color prosthesis as in claim 37 wherein said two components are held positioned in a prescribed relationship to each other by snap-

together mating parts.

41. The retinal color prosthesis as in claim 35 further comprising one of said two separate parts of the internal component that is configured as an electronic component and the other of said two separate parts of the internal component which is configured as an electrode component.

42. The retinal color prosthesis as in claim 41 further comprising said electrode component subretinally positioned and said electronic component epiretinally positioned.

43. The retinal color prosthesis as in claim 42 further comprising said electronics component in a position distant, within the eye, from said electrode component placed near the retina.

44. The retinal color prosthesis as in claim 1 further comprising an insulated conducting coil attached to the internal component, each end of the coil attached to an electrically different attachment point on said internal component.

45. The retinal color prosthesis as in claim 44 further comprising two insulated coils, one larger, and the second smaller, one free end of one coil joined to one free end of the second coil, the other free end of said one coil joined to the other free end of said second coil, said smaller coil in proximity to a coil attached to said internal component, said larger coil positioned and fastened toward the lens of the eye, for example, by suturing.

46. The retinal color prosthesis as in claim 1 further comprising internal component which is split into two parts, first part an electronics part, the second part an electronics and electrode part; the first and second parts have integral to each a pick-up of conducting insulated conducting coil; an energy transfer structure comprising two insulated conducting coils, one larger, and the second smaller, one free end of one coil joined to one free end of the second coil, the other free end of said

one coil joined to the other free end of said second coil, said smaller coil in proximity to said coil attached to the first internal part; said first internal part located in the fatty tissue behind the eye; the second internal part located within the eye; said larger coil attached temporally in the vicinity of the eye.

47. The retinal color prosthesis as in claim 1 further comprising a coating of neurotrophic factor on the surface of the electrodes.

48. The retinal color prosthesis as in claim 47 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the electrodes.

49. The retinal color prosthesis as in claim 1 further comprising a coating of neurotrophic factor on the surface of the insulator near the electrodes.

50. The retinal color prosthesis as in claim 49 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

51. The retinal color prosthesis as in claim 1 further comprising said plurality of electrodes partially insulated.

52. The retinal color prosthesis as in claim 51 further comprising electrodes recessed within an insulator.

53. The retinal color prosthesis as in claim 51 wherein the electrode surfaces are flat.

54. The retinal color prosthesis as in claim 51 wherein the insulating surfaces form a curved surface such as will conform to the curvature of the retina at its designated placement point.

55. The retinal color prosthesis as in claim 51 wherein the electrodes are recessed within the insulator, but the sides of the electrodes are exposed.

56. The retinal color prosthesis as in claim 1 wherein said electrodes are elongated electrodes, from 100 microns to 500 microns in length.

57. The retinal color prosthesis as in claim 1 wherein the electrodes are iridium slugs attached to a substrate by conductive adhesive.

58. The retinal color prosthesis as in claim 57 wherein the substrate is covered with aluminum or zirconium oxide or silicone as an insulator with wells where the iridium slugs are located.

59. The retinal color prosthesis as in claim 58 wherein the iridium slugs are situated with the insulating wells, fitting against the walls or the well.

60. The retinal color prosthesis as in claim 58 wherein the iridium slugs are situated with the insulating wells recessed approximately symmetrically from the sides of the wells.

61. The retinal color prosthesis as in claim 60 wherein the iridium slugs are situated within said openings in said covering material; and wherein said slugs are fitted against the sides of the wells.

62. The retinal color prosthesis as in claim 60 wherein the iridium slugs are situated within said openings in said covering material; wherein said slugs are recessed symmetrically from the walls of said openings.

63. The retinal color prosthesis as in claim 62 wherein the iridium slugs are differently situated relative to the tops of the wells, standing flush with the full height of the wells or recessed below the well tops; the depth of the well ranges from 0.1 μm to 1 mm.

64. The retinal color prosthesis as in claim 1 further comprising a iridium electrode which is attached onto a foil selected from the group consisting of

platinum foil or iridium foil that acts to hermetically seal the area it covers; said foil glued to an aluminum pad with electrically conductive glue; said aluminum pad deposited on a silicon substrate which may also support electronic circuitry; a titanium ring, sputtered, plated, ion implanted, ion-beam assisted deposited (IBAD) or otherwise attached to the platinum or iridium foil; with an insulating layer adhered to the titanium ring; wherein the insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

65. The retinal color prosthesis as in claim 1 further comprising a titanium nitride electrode which is sputtered onto a platinum or iridium foil that acts to hermetically seal the area it covers, said foil glued to an aluminum pad with electrically conductive glue, said aluminum pad deposited on a silicon substrate which may also support electronic circuitry, a titanium ring, sputtered, plated, ion implanted, or ion-beam assisted deposited (IBAD) to attach it to the platinum or iridium foil, with an insulating layer adhered to the titanium ring; wherein the insulation material is selected from the group consisting of silicon nitride/silicon oxide sandwich, silicon carbide, diamond-like coating, silicon nitride, silicon oxide, silicone , zirconium oxide, silicone, parylene, PTFE (polytetrafluoroethylene) and FEP (fluorinated ethylene propylene).

66. The retinal color prosthesis as in claim 64 or claim 65 wherein an platinum layer is plated onto the exposed part of the titanium ring and plated onto the layer of a substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide, the platinum layer acting as an electrical conductor.

67. The retinal color prosthesis as in claim 65 wherein the platinum electrode is internal to the well formed by a substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene

propylene and waxes, and its titanium ring; said electrode whole angle at it's peak being in the range from 1° to 120°; the base of said conical or pyramidal electrode ranging from 1 μm to 500 μm; the linear section of the well unoccupied by said conical or pyramidal electrode ranging from zero to one-third.

68. The retinal color prosthesis as in claim 65 wherein the platinum electrode has a mushroom-like shape with a narrower stalk and a larger head which has a larger plan view area than the well from which it arises.

69. The retinal color prosthesis as in claim 1 wherein hermetic sealing a component of said retinal color prosthesis is accomplished by coating the object to be hermetically sealed selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

70. The retinal color prosthesis as in claim 1 wherein hermetic sealing of a component of said retinal prosthesis is accomplished by placing it in a metal and ceramic box of rectangular cross-section with the top side and bottom side initially open, the bottom being a material selected from the group consisting of aluminum oxide or zirconium oxide; the top and four sides being a metal selected from the group consisting of platinum, iridium, gold, and stainless steel.

71. The retinal color prosthesis as in claim 70 further comprising solder balls placed on the "flip chip", which electrically contact metal feedthroughs made of a metal selected from the group iridium, platinum, titanium, palladium, gold, and stainless steel.

72. The retinal color prosthesis as in claim 71 wherein the metal-ceramic case empty of electronic circuitry, the ceramic base attachment to the metal sides is by brazing; with the flip-chip circuitry inside the metal-ceramic case, the metal top stands attached to the metal sides by laser welding..

73. An eye-motion compensation system comprising

a. an eye-movement tracking apparatus;

b. said eye-movement-tracking system measuring eye position, and time;

c. wherein said measurements are converted to information signals by the eye-movement tracking apparatus;

d. wherein said information signals are chosen from the group consisting of electromagnetic signals, acoustical signals, and light signals;

e. wherein said information signals are transmitted by a transmitter on the eye-movement tracking apparatus to a receiver on the video data processing unit;

f. said video data processor unit interprets eye movement measurements over time as angular positions, angular velocities, and angular accelerations;

g. said eye position, velocity, acceleration data is further processed by the video data processing unit; wherein feedback information is provided to the video data processor; wherein compensation, stabilization and adjustment for the motion of the eye is provided to an electronic image, from an imager carried by a patient; wherein said image is presentable to the retina by way of an internal-to-the-eye implant.

74. A head motion compensation system comprising a head motion tracking system wherein the motion and position of the head is sensed by a basic sensor selected from the group consisting of an integrating accelerometer, a micro-machined mechanical gyroscope, a laser gyroscope, a combination of an integrating accelerometer and a micro-machined mechanical gyroscope; a combination of an integrating accelerometer and a laser gyroscope; the motion and position of the head is determined by said basic sensor; wherein the data are communicated from the head tracking system to the video data processing unit by telemetry; wherein the data are processed in the video data processor; and wherein

said video data processing unit can process the data of the motion of the eye as well as that of the head to further adjust the image electronically whereby the electronic data image is presented to the patient adjusted for eye motion and head motion.

75. A physician's control unit comprising a unit located external to the eye of a patient; a first transceiver located in the physician's control unit; a second transceiver located in the internal-to-the-eye of the patient retinal color prosthesis implant; said physician's control unit transceiver transmits information which controls the image data parameters of the image supplied by external imager; and wherein the physician's control unit receives information which said implanted inside the patient's eye transmits out of the eye.

76. The apparatus of claim 75 further comprising said physician's control unit wherein the physician sets control parameters of the image data signal such as maximum and minimum amplitudes, range of pulse widths, range of frequencies, and electrode patterns of electrical stimulation.

77. The apparatus of claim 76 wherein said physician's control unit receives and monitors said transmitted-out, of the patient's eye, information including electrode current, electrode impedance, compliance voltage, and electrical recordings from the retina.

78. A physician's hand-held or palm-size test unit comprising a hand-held computer used to set up and evaluate a retinal color prosthesis implant during or soon after implantation at the patient's bedside; a transceiver in the hand-held test unit; a transceiver in the retinal color prosthesis internal-to-the-eye implant; said hand-held test unit having the capability of receiving signals which are transmitted out of the eye of the patient and having the ability to send information in to the retinal implant electronic chip; said hand-held computer able to adjust the amplitudes on each electrode,.one at a time, or in groups.

79. A patient's control unit comprising a unit located external to the

patient's eye and normally carried by the patient, including but not limited to, on a belt, that has patient accessible controls; said controls controlling apparent brightness, apparent contrast, and apparent magnification as presented to the patient's perception by the retinal color prosthesis; said patient's control unit having electronic circuits and components; wherein upon remote command, will respond in a manner similar to that of said physician's local unit; and which has a transmitter and a receiver for remote communication.

80. An electrode apparatus comprising a plurality of electrodes hermetically sealed by a coating of hermetic sealant; wherein said hermetic coating sealant is made from a material selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide or zirconium oxide.

81. The apparatus of claim 80 further comprising said electrodes from a material selected from the group consisting of pyrolytic carbon, titanium nitride, platinum, iridium, and iridium oxide.

82. The apparatus of claim 80 further comprising said plurality of electrodes insulated along their extension, up to their tips.

83. The apparatus of claim 80 further comprising said insulation selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

84. The apparatus of claim 80 further comprising said plurality of electrodes partially insulated.

85. The apparatus of claim 84 further comprising electrodes recessed within an insulator.

86. The apparatus of claim 85 wherein the electrode surfaces are flat.

87. The apparatus of claim 86 wherein the insulating surfaces form a curved surface such as will conform to the curvature of the retina at its designated placement point.

88. The apparatus of claim 85 wherein the electrodes are recessed within the insulator, but the sides of the electrodes are exposed.

89. The apparatus in claim 80 wherein said electrodes are capacitive electrodes.

90. The apparatus in claim 89 wherein said capacitive electrodes are selected as a pair from the group of pairs consisting of iridium and iridium oxide, and, titanium and titanium nitride.

91. The apparatus of claim 80 wherein said electrodes are elongated electrodes, from 100 microns to 500 microns in length.

92. The apparatus of claim 84 wherein said plurality of electrodes are, being of relative positive polarity, arranged in a unipolar arrangement, with the relative ground electrode on the insulated back of the electrode assembly.

93. The apparatus in claim 84 further comprising said plurality of electrodes in a bipolar arrangement.

94. The apparatus in claim 84 further comprising said plurality of electrodes in a multipolar arrangement.

95. The apparatus of claim 94 further comprising said plurality of electrodes in an electric field focusing arrangement.

96. The apparatus of claim 84 further comprising a coating of a neurotrophic factor on the surface of the electrodes.

97. The apparatus as in claim 96 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the electrodes.

98. The apparatus of claim 84 further comprising a coating of a neurotrophic factor on the surface of the insulator near the electrodes.

99. The apparatus as in claim 98 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

100. A retinal electrode array coating comprising a coating of neurotrophic factor on the surface of the electrodes.

101. The retinal electrode array coating as in claim 100 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the electrodes.

102. The retinal electrode array coating as in claim 100 further comprising a coating of neurotrophic factor on the surface of the insulator near the electrodes.

103. The retinal electrode array coating as in claim 100 further comprising a coating of Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

104. An eye-implantable electronic circuit subsystem comprising one or more electronic circuits hermetically sealed wherein said hermetic sealant is made from a coating selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes..

105. The eye-implantable electronic circuit subsystem of claim 104 wherein a hermetic sealant is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide,

tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide; and wherein said sealant is applied to an eye-implantable electronic circuit subsystem by ion-beam assisted deposition (IBAD).

106. The eye-implantable electronic circuit subsystem of claim 104 further comprising said internal component having a configuration of two or more physically separate parts wherein insulated wires join said parts, wherein at least one of said two or more physically separate parts of the internal component is configured as an electronic component and at least one of the other of said two or more separate parts of the internal component is configured as an electrode component.

107. The eye-implantable electronic circuit subsystem of claim 106 further comprising:

a. an at least one electrode component at least partially implanted subretinally; and

b. an at least one electronic component at least partially implanted epiretinally.

108. The eye-implantable electronic circuit subsystem of claim 104 further comprising:

a. an at least one electrode component implanted epiretinally; and

b. an at least one electronic component fastened subretinally.

109. The eye-implantable electronic circuit subsystem of claim 104 further comprising at least one said electronics component, in a position distant from at least one said electrode component, both said components within the eye.

110. The eye-implantable electronic circuit subsystem of claim 109 further comprising an insulated conducting coil attached to one electronic component by both ends of said coil.

111. The eye-implantable electronic circuit subsystem of claim 110

further comprising said coil attached to said electronic component, each end of the insulated conducting coil attached to an electrically different attachment point on said electronic component.

112. The eye-implantable electronic circuit subsystem of claim 104 further comprising a plurality of said insulated conducting coils attached to at least one electronic component by both ends of said coil.

113. The eye-implantable electronic circuit subsystem of claim 112 further comprising a plurality of said insulated conducting coils attached to at least one said electronic component, each end of the insulated conducting coil attached to an electrically different attachment point on said electronic component.

114. The eye-implantable electronic circuit subsystem of claim 113 further comprising an insulated conducting coil attached to one electrode component by both ends of said coil.

115. The eye-implantable electronic circuit subsystem of claim 114 further comprising said coil attached to said electrode component, each end of the insulated conducting coil attached to an electrically different attachment point on said electrode component.

116. The eye-implantable electronic circuit subsystem of claim 115 further comprising a plurality of said insulated conducting coils attached to at least one of said electrode components by both ends of said coil.

117. The eye-implantable electronic circuit subsystem of claim 115 further comprising a plurality of said coils attached to said electrode component, each end of said insulated conducting coil attached to an electrically different attachment point on said electrode component.

118. An eye-implantable subsystem comprising a configuration of two physically separate parts wherein insulated wires join said parts.

119. The eye-implantable subsystem as in claim 118 further comprising one of said two separate parts of the internal component that is configured as a combined electronic and electrode component and the other of said two separate parts of the internal component which is also configured as a combined electronic and electrode component.

120. The eye-implantable subsystem as in claim 119 further comprising one of said combined electronic and electrode components subretinally positioned and the other of said combined electronic and electrode components epiretinally positioned so as to efficiently stimulate bipolar and associated cells in the retina.

121. The eye-implantable subsystem as in claim 120 further comprising one of said two physically separate parts of the eye-implantable subsystem that is configured as an electronic component; and wherein the other of said two physically separate parts of the eye-implantable subsystem is configured as an electrode component.

122. The eye-implantable subsystem as in claim 121 further comprising at least one electrode component subretinally positioned and at least one electronic component epiretinally positioned.

123. The eye-implantable subsystem as in claim 122 further comprising at least one electronics component in a position distant, within the eye, from said electrode component; wherein said electrode component is placed near the retina; whereby the relatively high heat dissipation of electronic component has a minimal effect on the heat sensitive retina.

124. The eye-implantable subsystem as in claim 123 further comprising at least one electronics component in a position centrally within the vitreous cavity.

125. An eye-implantable subsystem for inductively transferring

electromagnetic energy into and out from an electronic component located internally in the eye, comprising:

a. a coil external to a patient;

b. two insulated conducting coils, both located within the ocular orbit;

c. one free end of a first coil joined to one free end of a second coil;

d. a second free end of said first coil joined to a second free end of said second coil;

e. a third coil attached integrally to an internal electronic component located within the eye;

f. said second coil located in proximity to said third coil.

g. wherein said first coil is inductively coupled by a changing electromagnetic field in the coil external to the patient; wherein said first coil is electrically connected to the second coil whereby the current in the second coil conforms to the current in the first coil; wherein said second coil is inductively coupled to said third coil by a second changing electromagnetic field; whereby a current produced in the third coil supplies energy to the electronic component located within the eye;

h. wherein a changing current supplied to the third coil by the electronic component within the eye produces a changing electromagnetic field in said third coil; wherein said third coil is inductively coupled to the second coil; wherein said second coil is electrically connected to said first coil; whereby a changing electromagnetic field is produced by the first coil;

i. wherein said first coil produces a changing electromagnetic field which can inductively couple to said coil external to the patient.

126. The eye-implantable subsystem of claim 125 wherein the position of said second coil is toward the lens of the eye; and said first coil is toward the front of the eye.

127. The eye-implantable subsystem of claim 126 wherein said second coil is positioned toward the retina of the eye; and said first coil is positioned toward the front of the eye.

128. An apparatus which transfers acoustic energy and information

into and out from an electronic component located internally in the eye, comprising:

a. a first acoustical bi-directional transducer located within the eye;

b. wherein said bi-directional transducer acts as a transmitter and a receiver of acoustical energy;

c. a second bi-directional acoustical transducer located on an external unit worn on the head;

d. wherein said bi-directional transducer acts as a transmitter and a receiver of acoustical energy;

e. acoustic signal information and acoustic energy transmitted from one of said transducers is received by other of said transducers;

f. each of said acoustical transducers receives and amplifies a received signal and received power;

g. each of said acoustical transducers converts the received signal and the received power to an electrical signal and to electrical power.

129. A method for making a retinal prosthetic for color sight restoration comprising the steps of:

a. imaging with a color imager to capture color image, said color imaging being part of an external component, which is carried by the patient;

b. processing video data with a video data processing unit for converting said image to electrical signals which contain image color signal data, said color imaging being part of said external component, which is carried by the patient;

c. implanting internal to the eye a component which has a plurality of electrodes and one or more electronic circuits;

d. communicating between the external receiver and transmitter and the internal receiver and transmitter for communication between the external component and the internal component;

e. configuring said electronic circuits to receive color signal information from the video data processing unit, activate the electrodes based on said color signal information and extract electrical power from the received signal;

f. configuring said electrodes to stimulate bipolar cells of the retina electrically.

130. The method as in claim 129 further comprising the step of processing data with a video data processing unit which converts said color image to electrical signals corresponding to data for a pixel or grid-like arrangement of electrodes placed within the eye.

131. The method as in claim 129 further comprising the step of compensating for eye-motion with an eye-motion compensation system.

132. The method as in claim 131 comprising the steps of:

a. tracking eye-movements;

b. measuring eye movements;

c. transmitting said measurements to video data processor unit; interpreting eye movement measurements as angular positions, angular velocities, and angular accelerations;

d. processing eye position, velocity, acceleration data by the video data processing unit;

e. compensating, stabilizing and adjusting image electronically.

133. The method as in claim 132 further comprising the steps of, for a head tracking system, determining the motion and position of the head by an apparatus selected from the group consisting of an inertial unit with an integrating accelerometer, a laser gyroscope, and a combined inertial unit (with an integrating accelerometer) together with a laser gyroscope; processing the data in the video data processor; communicating the data from the head tracking system to the video data processing unit by telemetry.

134. The method as in claim 133 further comprising the steps of processing video data image and other data related to said image signal data, including electronic compensation for the motion of the eye(s) and including electronic compensation for the motion of the head; utilizing said video data processing unit.

135. The method as in claim 129 further comprising the steps of monitoring and adjusting, upon external command, data to and from the internal

retinal implants using programmable external and internal units.

136. The method as in claim 129 further comprising the steps of, for a physician's control unit, locating a unit external to the eye; controlling information supplied by external image signal data at physician's choice; and receiving diagnostic which an implanted unit inside the eye transmits out of the eye.

137. The method as in claim 136 further comprising the steps of controlling and setting the parameters, by the physician, of the image data signal such as amplitudes, pulse widths, frequencies, and patterns of electrical stimulation.

138. The method as in claim 136 further comprising the steps of receiving and monitoring said transmitted-out information including electrode current, electrode impedance, compliance voltage, and electrical recordings from the retina, utilizing the physician's control unit.

139. The method as in claim 129 further comprising the steps of, for a physician's hand-held unit, setting up and evaluating a retinal color prosthesis implant soon after the implantation, at the patient's bedside utilizing a handheld computer-based unit; receiving signals transmitted out of the eye; transmitting information in to the retinal color implant electronic chip; adjusting the amplitudes on each electrode, one at a time, or in groups; determining success of the retinal implant.

140. The method as in claim 129 further comprising the steps of, for a patient's control unit, controlling apparent brightness, contrast, and magnification utilizing a unit external to the eye; managing the controls by the patient.

141. The method as in claim 130 further comprising the steps of encoding and transmitting time sequences and widths of pulses for signaling color to bipolar cells, using said video data processing unit.

142. The method as in claim 130 further comprising the steps of: processing video data; encoding electrical signal information for signaling color to the different bipolar cells utilizing the video data processor, in a planar pattern,

corresponding to the location of electrodes in the vicinity of the individual bipolar cells, including red-center-green surround, green-center-red-surround, blue-center-yellow surround and yellow-center-blue-surround bipolar cells.

143. The method as in claim 129 further comprising the steps of hermetically sealing and partially insulating one or more electrode subpart(s).

144. The method as in claim 129 further comprising the step of hermetically sealing one or more electronic circuit subpart(s).

145. The method as in claim 129 further comprising the step of transferring received processed image data to the electrodes by utilizing electronic circuits within the eye.

146. The method as in claim 145 further comprising the step of applying received color signal information to a plurality of electrodes, corresponding to the original external pixel-like scene capture; utilizing electronic circuits.

147. The method as in claim 129 further comprising the steps of measuring and transmitting out of the eye the signal power level being received internally; utilizing electronic circuits.

148. The method as in claim 129 further comprising the steps of measuring and transmitting out of the eye an impedance for each of the different electrodes; utilizing electronic circuits.

149. The method as in claim 129 further comprising the steps of measuring electrophysiologic retinal recordings and transmitting them out of the eye; utilizing electronic circuits.

150. The method as in claim 129 further comprising the step of implanting fully subretinally said internal component.

151. The method as in claim 129 further comprising the step of

implanting epiretinally said internal component.

152. The method as in claim 129 further comprising the step of configuring said plurality of electrodes in a monopolar arrangement.

153. The method as in claim 129 further comprising the step of configuring said plurality of electrodes in a bipolar arrangement.

154. The method as in claim 129 further comprising the step of configuring said plurality of electrodes in a multipolar arrangement.

155. The method as in claim 155 further comprising the step of configuring said plurality of electrodes in an electric field focusing arrangement.

156. The method as in claim 129 further comprising the step of selecting said plurality of electrodes comprises a substance from the group consisting of pyrolytic carbon, titanium nitride, platinum, iridium, and iridium oxide.

157. The method as in claim 143 or claim 144 further comprising the step of selecting an hermetic sealant coating substance from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

158. The method as in claim 129 further comprising the step of insulating said plurality of electrodes along their extension, up to their tips.

159. The method as in claim 158 further comprising the step of selecting said insulation from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

160. The method as in claim 129 further comprising the step of

selecting a pair of substances to form a plurality of capacitive electrodes, the group of pairs consisting of the pairs iridium and iridium oxide, and, titanium and titanium nitride.

161. The method as in claim 129 further comprising the step of mounting a plurality of capacitors on the electrode substrate in a one-to-one correspondence with the plurality of electrodes.

162. The method as in claim 129 further comprising the step of configuring said internal component into two separate parts wherein insulated wires join said parts.

163. The method as in claim 162 further comprising the steps of configuring one of said two separate parts of the internal component as a combined electronic and electrode component and configuring the other of said two separate parts of the internal component as a combined electronic and electrode component.

164. The method as in claim 163 further comprising the steps of positioning one of said combined electronic and electrode component subretinally and positioning the other of said combined electronic and electrode component epiretinally.

165. The method as in claim 164 further comprising the step of holding said two components positioned in a prescribed relationship to each other by small magnets.

166. The method as in claim 164 further comprising the step of holding said two components in a prescribed relationship to each other by alignment pins.

167. The method as in claim 164 further comprising the step of holding said two components positioned in a prescribed relationship to each other by snap-together mating parts.

168. The method as in claim 162 further comprising the steps of configuring one of said two separate parts of the internal component as an electronic component and configuring the other of said two separate parts of the internal component as an electrode component.

169. The method as in claim 168 further comprising the steps of positioning said electrode component subretinally and said positioning said electronic component epiretinally.

170. The method as in claim 169 further comprising the steps of placing said electrode component near the retina; and placing said electronics component in a position distant, within the eye, from said electrode component.

171. The method as in claim 129 further comprising the steps of attaching an insulated conducting coil to the internal component, attaching each end of the coil to an electrically different attachment point on said internal component.

172. The method as in claim 171 further comprising the steps of joining two insulated coils, the first larger, and the second smaller, joining one free end of the first coil to one free end of the second coil, joining the other free end of said first coil to the other free end of said second coil, placing said smaller coil in proximity to a coil attached to said internal component, positioning and fastening said larger coil toward the lens of the eye.

173. The method as in claim 129 further comprising the steps of building an internal component in two parts, the first part an electronics part, the second part an electronics and electrode part; integrating an insulated conducting pick-up coil into each of the first and second internal component parts; joining two insulated conducting coils, one larger, and the second smaller, joining one free end of the first larger coil to one free end of the second smaller coil, joining the other free end of said first larger coil to the other free end of said second smaller coil, attaching said second smaller coil in proximity to said coil integrated to the first internal part; locating said first internal part in the fatty tissue behind the eye; locating the second internal part within the eye; attaching said larger coil to the temporal region of the

head, in the vicinity of the eye.

174. The method as in claim 129 further comprising the step of coating a neurotrophic factor onto the surface of the electrodes.

175. The method as in claim 174 further comprising the step of coating a Nerve Growth Factor (NGF) on the surface of the electrodes.

176. The method as in claim 129 further comprising the step of coating a neurotrophic factor on the surface of the insulator near the electrodes.

177. The method as in claim 176 further comprising the step of coating a Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

178. The method as in claim 129 further comprising the step of partially insulating said plurality of electrodes.

179. The method as in claim 178 further comprising the step of recessing electrodes within an insulator.

180. The method as in claim 179 further comprising the step of forming the electrodes with flat surfaces.

181. The method as in claim 179 further comprising the step of forming the insulating surfaces as a curved surface; conforming said curvature to the curvature of the retina at its designated placement point.

182. The method as in claim 179 further comprising the steps of recessing the electrodes within the insulator; and exposing the sides of the electrodes.

183. The method as in claim 129 further comprising the step of fabricating elongated electrodes from 100 microns to 500 microns in length.

184. The method as in claim 129 further comprising the step of attaching iridium slug electrodes to a substrate by conductive adhesive.

185. The method as in claim 184 further comprising the step of covering the substrate with aluminum or zirconium oxide or silicone; leaving openings where the iridium slugs are located.

186. The method as in claim 185 further comprising the steps of situating the iridium slugs, one-to-one, within said openings, in said covering material; fitting said iridium slugs against the walls of said openings.

187. The method as in claim 185 further comprising the steps of situating the iridium slugs, one-to-one, within said openings in said covering material; and recessing said iridium slugs symmetrically from the walls of said openings.

188. The method as in claim 186 or in claim 187 further comprising the step of situating said iridium slugs to stand with their tops flush with the tops of the openings where the depth of the openings range from 0.1 μm to 1 mm.

189. The method as in claim 186 or in claim 187 further comprising the step of situating said iridium slugs to stand with their tops recessed below the top of the openings where the depth of the openings range from 0.1 μm to 1 mm.

190. The method as in claim 189 further comprising the step of constructing a iridium electrode assembly, further comprising the steps of depositing an aluminum pad on a silicon substrate, which may also support electronic circuitry; electroplating iridium onto a foil selected from the group consisting of platinum or iridium foil; sealing the area said foil covers hermetically by said foil, gluing said foil to said aluminum pad with electrically conductive glue; attaching, sputtering, plating, ion implanting, or ion-beam assisted depositing (IBAD) a titanium ring, to the platinum or iridium foil; adhering an insulating layer to the titanium ring, where insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum

oxide, aluminum nitride, aluminum oxide and zirconium oxide.

191. The method as in claim 129 further comprising the step of constructing a titanium electrode assembly, further comprising the steps of depositing an aluminum pad on a silicon substrate, which may also support electronic circuitry; electroplating titanium onto a platinum or iridium foil; sealing the area said foil covers hermetically by said foil, gluing said foil to said aluminum pad with electrically conductive glue; attaching, sputtering, plating, ion implanting, ion-beam assisted depositing (IBAD) a titanium ring, to the platinum or iridium foil; adhering an insulating layer to the titanium ring, where insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

192. The method as in claim 190 or claim 191 further comprising the step of plating an aluminum layer onto the exposed part of the titanium ring and onto a material selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide, said aluminum layer acting as an electrical conductor.

193. The method as in claim 191 further comprising the steps of forming said platinum electrode internal to the well formed by a substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide, and its titanium ring; fabricating said electrode with its whole peak angle in the range from 1° to 120°; forming the base of said conical or pyramidal electrode in the range from 1 μm to 500 μm; forming the linear section of the well unoccupied by said conical or pyramidal electrode in the range ranging from zero to one-third of the whole linear section.

194. The method as in claim 191 further comprising the steps of forming the platinum electrode with a mushroom-like shape with a narrower stalk;

constructing said electrode head with a larger plan view area than the well from which it arises.

195. The method as in claim 129 further comprising the step of hermetically sealing a component of said retinal color prosthesis by coating said component with a substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

196. The method as in claim 129 further comprising the step of hermetic sealing a component of said retinal color prosthesis by placing it in a metal and ceramic box of rectangular cross-section with the top side and bottom side initially open, the bottom being a ceramic selected from the group consisting of aluminum oxide and zirconium oxide; the top and four sides being a metal selected from the group consisting of platinum, iridium, palladium, gold, and stainless steel.

197. The method as in claim 196 further comprising the steps of placing solder balls on a "flip chip"; selecting a metal for the metal feedthroughs which the contact the solder balls from the group iridium, platinum, titanium, palladium, gold, and stainless steel; and plating the inner surface of the feed-through, toward the solder ball being plated with gold or with nickel.

198. The method as in claim 197 further comprising the steps of brazing the ceramic base of the metal-ceramic case to the metal sides of said case with said metal-ceramic case empty of electronic circuitry; laser welding, subsequently, with the flip chip circuitry inside the case, the metal top of said case to the metal sides of said case.

199. The method as in claim 129 further comprising the steps of compensating for eye motion further comprising the steps of measuring eye motion; transmitting said eye motion information to said video data processing unit; interpreting eye movements data as angular positions, angular velocities, and angular acceleration; processing of eye position motion data by the video data processing unit;

compensating for eye movement effects on the image by electronic compensation, stabilization and adjustment.

200. The method as in claim 129 further comprising the steps of receiving diagnostic information from and supplying calibration and adjustment information to said retinal color prosthetic utilizing a physician's control unit; receiving and transmitting said information with said physicians control unit.

201. The method as in claim 129 further comprising the steps of the physician, or a medical technician, controlling and setting parameters of the image data signal such as amplitudes, pulse widths, frequencies, and patterns of electrical stimulation utilizing the physician's control unit.

202. The method as in claim 129 further comprising the steps of the physician, or a medical technician, is monitoring transmitted-out information including electrode current, electrode impedance, compliance voltage, and electrical recordings from the retina, utilizing the physician's control unit.

203. The method as in claim 129 further comprising the steps of utilizing a physician's post-operative hand held computer-based test unit to set up and to evaluate a retinal prosthesis implant during or soon after implantation, at the patient's bedside; sending information to and receiving information from the video data processing unit utilizing said physician's post-operative unit; sending information to the retinal implant electronic chip; adjusting the amplitudes on each electrode, one at a time, or in groups utilizing said hand-held computer-based test unit; and determining the success of the retinal prosthesis.

204. The method as in claim 129 further comprising the steps of controlling apparent brightness, controlling apparent contrast and controlling magnification utilizing a patient-operated patient's control unit; locating said patient's unit external to the eye.

205. The method as in claim 129 further comprising the steps of utilizing a physician's remote unit to perform all of the functions of the local

physician's control unit; communicating with the video data processing unit, both transmitting set-up and control commands, and receiving diagnostic and monitoring information.

206. A method for making an eye-motion compensation system comprising the steps of:

a. tracking eye-movements;

b. measuring eye movements as to position and time;

c. converting said measurements to information signals

d. transmitting said measurements to video data processor unit;

e. interpreting eye movement measurements as angular positions, angular velocities, and angular accelerations;

f. processing eye position, velocity, and acceleration data by the video data processing unit;

g. compensating, stabilizing and adjusting an imager generated image, said imager carried by a patient, wherein an imager generated image, presentable to the retina via an internal-to-the-eye implant, is electronically compensated, stabilized and adjusted for the motion of the eye.

207. The method of claim 206 further comprising the steps of: selecting a head tracking apparatus from the group consisting of an inertial unit with an integrating accelerometer, a laser gyroscope, and a combined inertial unit with an integrating accelerometer together with a laser gyroscope; determining the motion and position of the head by said apparatus; processing the data from said apparatus in the video data processor; transmitting the data from said apparatus the head tracking system to the video data processing unit by telemetry; processing the data of the motion of the eye as well as that of the head; adjusting an imager generated image, presentable to the retina via an internal-to-the-eye implant, electronically; compensating, stabilized and adjusted for the motion of the eye and head.

208. A method for enabling a physician to control and evaluate the parameters for a retinal color prosthesis comprising the steps of controlling information supplied by an external-to-the-patient image signal to an internal-to-the-eye implant; and receiving diagnostic information from the implant.

209. The method of claim 208 further comprising the steps of the physician controlling and setting the parameters of the image data signal such as amplitudes, pulse widths, frequencies, and patterns of electrical stimulation.

210. The method of claim 209 further comprising the steps of receiving and monitoring information from the internal-to-the-eye implant including electrode current, electrode impedance, compliance voltage, and electrical recordings from the retina.

211. A method for enabling a physician to set up the settable parameters of and evaluate the success of a retinal color prosthesis implant soon after the implantation comprising the steps of utilizing a handheld computer-based unit at the patient's bedside; receiving signals transmitted out of the eye from an internal-to-the-eye retinal color prosthesis implant; transmitting information in to the retinal color implant electronic chip component; adjusting the amplitudes on each electrode, one at a time, or in groups.

212. A method for enabling a patient to control some parameters of a retinal color prosthesis comprising the steps of controlling apparent brightness, contrast and magnification of the patient's perception; utilizing an imager to supply an electronic image signal to a video data processing unit; utilizing a control unit external to the eye; plugging said unit external to the eye into a mating plug on the video data processing unit of said retinal processing unit; controlling patient settable parameters by patient operated controls; resetting the video data processing unit parameters; keeping the reset parameter settings until reset by the patient or a physician.

213. A method for making an implantable, retinal-cell stimulating electrode array comprising the step of selecting a plurality of electrodes from the group consisting of pyrolytic carbon, titanium nitride, platinum, iridium, and iridium oxide.

214. The method of claim 213 further comprising the steps of hermetic

sealing said electrode array by coating said electrode array with a material selected. from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes..

215. The method of claim 213 further comprising the step of insulating said plurality of electrodes along their extension, up to their tips.

216. The method of claim 215 further comprising the step of selecting said insulation from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

217. The method of claim 213 further comprising the step of partially insulating said plurality of electrodes.

218. The method of claim 213 further comprising the step of recessing electrodes within an insulator.

219. The method of claim 218 further comprising the step of constructing the electrode surfaces as flat surfaces flush with the bottom of the insulator recess.

220. The method of claim 219 further comprising the step of conforming the curvature of the insulating surfaces to the curvature of the retina at the designated placement area of the insulating surface.

221. The method of claim 218 further comprising the steps of recessing the electrodes within the insulator; and exposing the sides of the electrodes.

222. The method of claim 213 further comprising the step of constructing said electrodes as capacitive electrodes.

223. The method of claim 222 further comprising the step of selecting said capacitive electrodes as a pair from the group of pairs consisting of iridium and iridium oxide, and, titanium and titanium nitride.

224. The method of claim 213 further comprising the step of producing said electrodes as elongated electrodes, from 100 microns to 500 microns in length.

225. The method of claim 213 further comprising the step of arranging said plurality of electrodes, in a unipolar arrangement, with the indifferent electrode on the insulated back of the electrode assembly.

226. The method of claim 213 further comprising the step of arranging said plurality of electrodes in a bipolar arrangement.

227. The method of claim 213 further comprising the step of arranging said plurality of electrodes in a multipolar arrangement.

228. The method of claim 227 further comprising the step of arranging said plurality of electrodes in an electric field focusing arrangement.

229. The method of claim 213 further comprising the step of coating a neurotrophic factor on the surface of the electrodes.

230. The method of claim 229 further comprising the step of coating a Nerve Growth Factor (NGF) on the surface of the electrodes.

231. The method of claim 213 further comprising the step of coating a neurotrophic factor on the surface of the insulator near the electrodes.

232. The method of claim 231 further comprising the step of coating a Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

233. A method for a neurotrophic coating comprising the step of coating an electrode array with a neurotrophic factor on the surface of the electrodes.

234. The method for a neurotrophic coating of claim 233 further comprising the step of coating Nerve Growth Factor (NGF) on the surface of the electrodes.

235. The method for a neurotrophic coating of claim 233 further comprising the step of coating a neurotrophic factor on the surface of the insulator near the electrodes.

236. The method for a neurotrophic coating of claim 23 further comprising the step of coating Nerve Growth Factor (NGF) on the surface of the insulator near the electrodes.

237. A method for making an eye-implantable electronic circuit system comprising the steps of hermetically sealing one or more electronic circuits with a coating selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes.

238. The method of claim 237 further comprising the step of configuring said eye-implantable electronic circuit system as two or more separate parts wherein insulated wires join said parts.

239. The method of claim 238 further comprising the steps of configuring at least one of said two or more separate parts of the eye-implantable electronic circuit system as a predominantly electronic component and configuring at least one of the other of said two or more separate parts of the eye-implantable electronic circuit system as an electrode component.

240. The method of claim 239 further comprising the steps of:

a. implanting at least one said electrode component at least partially subretinally; and

b. implanting at least one said electronic component at least partially epiretinally.

241. The method of claim 239 further comprising the steps of:

a. implanting at least one said electrode component; and

b. implanting at least one said electronic component subretinally.

242. The method of claim 241 further comprising at least one said electronics component, in a position distant, in the eye, from at least one said electrode component, in the eye, positioned near the retina.

243. The method of claim 241 further comprising the step of positioning at least one electronics component in a position centrally within the vitreous cavity.

244. A method for constructing a coil system for driving a retinal color prosthetic internal-to-the eye electronic implant component comprising the step of attaching an insulated conducting coil to an internal-to-the-eye electronic implant component by both ends of said coil.

245. The method of claim 244 further comprising the steps of attaching said coil to an electronic internal component; attaching each end of the insulated conducting coil to an electrically different attachment point on said electronic component.

246. The method of claim 244 further comprising the step of attaching a plurality of insulated conducting coils to at least one electronic component by both ends of said coils.

247. The method of claim 244 further comprising the steps of attaching

a plurality of insulated conducting coils to at least one electronic internal component; attaching each end of said insulated conducting coils to an electrically different attachment point on at least one said electronic internal component.

248. The method for a coil system of claim 244 further comprising the step of attaching an insulated conducting coil to an electrode internal component by both ends of said coil.

249. The method of claim 248 further comprising the steps of attaching said coil to said electrode internal component; attaching each end of the coil to an electrically different attachment point on said electrode internal component.

250. The method of claim 249 further comprising the step of attaching a plurality of said insulated conducting coils to at least one electrode internal component by both ends of said coil.

251. The method of claim 250 further comprising the steps of attaching a plurality of said coils to said electrode internal component; attaching each end of the insulated conducting coil to an electrically different attachment point on said electrode internal component.

252. The method of claim 244 further comprising the steps:

a. locating two insulated conducting coils located within the ocular orbit;

b. joining a first free end of a first coil to a first free end of the second coil;

c. joining a second free end of said first coil to a second free end of said second coil;

d. attaching integrally a third coil to an internal electronic part located within the eye;

e. locating said second coil in proximity to said third coil.

253. The method of claim 252 further comprising the steps of

positioning said second coil toward the lens of the eye; and positioning said first coil toward the front of the eye.

254. The method of claim 253 further comprising the steps of positioning said second coil toward the retina of the eye; and positioning said first coil toward the front of the eye.

255. A method for an acoustical energy and information transfer which transfers acoustic energy and information from and to a retinal color prosthesis internal-to-the-eye electronic implant component located internally in the eye, comprising the steps of:

a. locating an acoustical transducer in the eye;

b. locating an acoustical transducer on an external unit worn on the head;

c. transmitting acoustic signal information and acoustic energy from the first and from the second of said transducers;

d. receiving acoustical signal information and acoustical energy by the second and by the first transducers;

e. amplifying said received acoustical signal information and acoustical power by said acoustical transducers.

256. An apparatus which transfers light energy and information into an electronic component located internally in the eye, comprising:

a. a photogenerator located externally to the eye; wherein a modulated electrical signal is turned into a modulated light signal;

b. a photodetector located on the internally located electronic component;

c. light energy and information transmitted by the photogenerator;

d. light information and energy received by the photodetector; wherein the modulated light signal is turned into a modulated electrical signal;

e. an electronic component located internally to the eye; wherein energy and information are extracted from the electrical signal.

257. An apparatus which transfers light energy and information out from an electronic component located internally in the eye, comprising:

a. a photogenerator located internally to the eye on an electronic

component; wherein a modulated electrical signal is turned into a modulated light signal;

d. a photodetector located externally located externally to the eye;

e. light energy and information transmitted by the photogenerator;

f. light information and energy received by the photodetector; wherein the plurality of modulated light signals is turned into a plurality of modulated electrical signals;

g. at least one electronic circuit located externally to the eye; wherein energy and information are extracted from the electrical signal;

258. An apparatus which transfers light energy and information into and out from an electronic component located internally in the eye, comprising:

a. a photogenerator located externally to the eye; wherein a modulated electrical signal is turned into a modulated light signal;

b. a photodetector located on the internally located electronic component;

c. a photogenerator located internally to the eye on an electronic component; wherein a modulated electrical signal is turned into a modulated light signal;

d. a photodetector located externally located externally to the eye;

e. light energy and information transmitted by a plurality of photogenerators;

f. light information and energy received by a plurality of photodetectors; wherein the plurality of modulated light signals is turned into a plurality of modulated electrical signals;

h. at least one electronic circuit located externally to the eye; wherein energy and information are extracted from the electrical signal;

i. an electrical component located internally to the eye; wherein energy and information are extracted from the electrical signal.

j. said external photogenerator disposed as to send light information and energy to the internal photodetector;

k. said internal light generator disposed so as to send light information and energy to the external photodetector.

259. A method for light energy and information transfer, which

transfers light energy into an electronic component, located internally in the eye, comprising the steps of:

a. locating a photogenerator externally to the eye; wherein a modulated electrical signal is turned into a modulated light signal;

b. locating a photodetector on the internally located electronic component;

c. transmitting light energy and information from the photogenerator;

d. receiving light information and energy by the photodetector; wherein the modulated light signal is turned into a modulated electrical signal;

e. locating an electrical component internally to the eye; extracting energy and information from the electrical signal.

260. A method for light energy and information transfer, which transfers light energy out of an electronic component, located internally in the eye, comprising the steps of:

a. locating a photogenerator internally to the eye on an electronic component; turning a modulated electrical signal into a modulated light signal;

b. locating a photodetector externally to the eye;

c. transmitting light energy and information from the photogenerator;

d. receiving light information and energy from the photodetector; turning the modulated light signal into turned a modulated electrical signal;

e. locating at least one electronic circuit externally to the eye; extracting energy and information from the electrical signal;

261. A method for light energy and information transfer, which transfers light energy into and out of an electronic component, located internally in the eye, comprising the steps of:

a. locating a photogenerator externally to the eye; turning a modulated electrical signal into a modulated light signal;

b. locating a photodetector on the internally located electronic component;

c. locating a photogenerator internally to the eye on an electronic component; turning a modulated electrical signal into a modulated light signal;

d. locating a photodetector externally to the eye;

e. transmitting light energy and information from a plurality of light generators;

f. receiving light information and energy by a plurality of photodetectors; turning the plurality of modulated light signals into a plurality of modulated electrical signals;

g. locating at least one electronic circuit externally to the eye; extracting energy and information from the electrical signal;

h. locating an electrical component internally to the eye; extracting energy and information from the electrical signal.

i. disposing said external photogenerator so as to send light information and energy to the internal photodetector;

j. disposing said internal light generator so as to send light information and energy to the external photodetector.

262. An iridium electrode for a retinal color prosthesis comprising an iridium electrode which is attached onto a foil selected from the group consisting of platinum foil and iridium foil that acts to hermetically seal the area it covers; said foil glued to an aluminum pad with electrically conductive glue; said aluminum pad deposited on a silicon substrate which may also support electronic circuitry; a titanium ring, sputtered, plated, ion implanted, ion beam assisted deposited (27) or otherwise attached to the platinum or iridium foil; with an insulating layer adhered to the titanium ring, where insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

263. A titanium nitride electrode for a retinal color prosthesis comprising a titanium nitride electrode which is sputtered onto a foil selected from the group consisting of platinum foil and iridium foil that acts to hermetically seal the area it covers; said foil glued to an aluminum pad with electrically conductive glue; said aluminum pad deposited on a silicon substrate which may also support electronic circuitry; a titanium ring, sputtered, plated, ion implanted, ion-beam assisted deposited (IBAD) or otherwise attached to the platinum or iridium foil; with an insulating layer adhered to the titanium ring, where insulation material is selected from the group silicon carbide, diamond-like coating, silicon nitride and silicon oxide

in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

264. A method for making an iridium electrode assembly for a retinal color prosthesis comprising the step of constructing an iridium electrode assembly, further comprising the steps of depositing an aluminum pad on a silicon substrate, which may also support electronic circuitry; electroplating iridium onto a foil selected from the group consisting of platinum or iridium foil; sealing the area said foil covers hermetically by said foil, gluing said foil to said aluminum pad with electrically conductive glue; attaching, sputtering, plating, ion implanting, ion-beam assisted depositing (IBAD) a titanium ring, on to the platinum or iridium foil; adhering an insulating layer to the titanium ring, where insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

265. A method for making a titanium nitride electrode assembly for a retinal color prosthesis comprising the step of constructing a titanium electrode assembly, further comprising the steps of depositing an aluminum pad on a silicon substrate, which may also support electronic circuitry; electroplating titanium onto a foil selected from the group consisting of platinum foil or iridium foil; sealing the area said foil covers hermetically by said foil; gluing said foil to said aluminum pad with electrically conductive glue; attaching, sputtering, plating, ion implanting or ion-beam- assisted depositing (IBAD) a titanium ring on to the platinum or iridium foil; adhering an insulating layer to the titanium ring, where insulation material is selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide.

266. The method as in claim 264 or claim 265 further comprising the step of plating an aluminum layer onto the exposed part of the titanium ring and onto a material selected from a group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide and zirconium oxide, said aluminum layer acting

as an electrical conductor.

267. The method as in claim 265 further comprising the steps of forming said platinum electrode internal to a well formed by a substance selected from the group consisting of silicon carbide, diamond-like coating, silicon nitride and silicon oxide in combination, titanium oxide, tantalum oxide, aluminum nitride, aluminum oxide, zirconium oxide, PTFE (polytetrafluoroethylene), FEP (fluorinated ethylene propylene and waxes, and its titanium ring; fabricating said electrode with its whole peak angle in the range from 1° to 120°; forming the base of said conical or pyramidal electrode in the range from 1 μm to 500 μm; forming the linear section of the well unoccupied by said conical or pyramidal electrode in the range ranging from zero to one-third of the whole linear section.

268. The method as in claim 265 further comprising the steps of forming the platinum electrode with a mushroom-like shape with a narrower stalk; constructing said electrode head with a larger plan view area than the well from which it arises.